

**CLAIMS**

- 5     1. A light head for a traffic signal housing, comprising:  
         a plurality of LED lamps affixed to and projecting from substrate inclined  
         therein conductive pathways formed thereon for supplying power thereto; and  
         the plurality of LED lamps may be selectively oriented on the substrate at  
         least during fabrication thereof, so as to shape output light beam.
- 10     2. The apparatus of Claim 1, wherein an LED lamp generates a cone shaped  
         light pattern ranging between 6 and 30 °.
3. The apparatus of Claim 1, wherein the LED lamp generates an optimum 8 °  
15     cone shaped light pattern.
4. The emitted cone shaped light pattern of Claim 2, comprising a 1 inch (2.5 cm)  
         long light pattern.
- 20     5. The emitted cone shaped light pattern of Claim 2, wherein each light pattern  
         overlaps at a distance greater than 1 inch (2.5 cm).

6. The apparatus Claim 1, wherein the substrate comprises a hot resin formation or cold resin formation.

7. The apparatus of Claim 1, wherein the plurality of LED lamps sit generally  
5 perpendicular to a planar surface the substrate.

8. The apparatus of Claim 1, wherein the substrate is affixed to the traffic signal housing by welding, stapling, glue, or fasteners.

10 9. A light head for a traffic signal housing, comprising:  
a mounting structure for coupling a traffic signal housing; and  
a plurality of LED lamps selectively oriented obliquely at least relative to  
each other in the mounting structure so that respective projected outputs thereof  
are combined and shaped to form a selected pattern including at least one of  
15 desired intensity and direction.

10. The apparatus of Claim 9, wherein an LED lamp generates a cone shaped light pattern ranging between 6 and 30 °.

20 11. The apparatus of Claim 9, wherein the LED lamp generates an optimum 8 ° cone shaped light pattern.

12. The emitted cone shaped light pattern of Claim 10, comprising a 1 inch (2.5 cm) long light pattern.

13. The emitted cone shaped light pattern of Claim 10, wherein each light pattern  
5 overlaps at a distance greater than 1 inch (2.5 cm).

14. The apparatus Claim 9, wherein the mounting structure comprises at least one printed circuit board, at least one wing plate, and at least one vertical plate.

10 15. The apparatus of Claim 9, wherein the plurality of LED lamps sit generally perpendicular to a planar surface in the at least one printed circuit board.

16. The apparatus of Claim 9, wherein the at least one printed circuit board is affixed to the wing plate by welding, stapling, glue, or fasteners.

15

17. The apparatus of Claim 14, wherein the at least one printed circuit board is angled generally downward by the at least one vertical plate from a back surface of the signal housing.

20 18. The apparatus Claim 14, wherein the at least one wing plate orients the at least one printed circuit board inward from a center line of the at least one vertical plate.

19. The apparatus of Claim 14, wherein the at least one vertical plate is affixed to the at least one wing plate and a back surface of the signal housing by welding, stapling, glue, or fasteners.

- 5 20. A method of shaping a desired beam path of light, method comprising:
- coupling a mounting assembly to a signal housing;
  - orienting a plurality of LED lamps coupled to the mounting
  - assembly within the signal housing; and
  - transmitting a signal from the signal housing to a street using a
- 10 traffic signal device.

21. The method of claim 20 wherein an LED lamp generates a cones shaped light pattern ranging between 6 and 30 °.

- 15 22. The method of claim 20, wherein the LED lamp generates an optimum 8 ° cone shaped light pattern.

23. The method of claim 21, wherein the emitted cone shaped light pattern comprises a 1 inch (2.5 cm) long light pattern.

20

24. The method of claim 21, wherein the emitted cone shaped light pattern overlaps at a distance greater than 1 inch (2.5 cm).

25. The method of Claim 20, wherein the mounting surface assembly comprises at least one printed circuit board, at least one wing plate, and at least one vertical plate.

5 26. The method of Claim 20, wherein the plurality of LED lamps are arrayed on the at least one printed circuit board equidistant between other.

27. The method of Claim 20, wherein the plurality of LED lamps sit generally perpendicular to a planar surface of the at least one printed circuit board.

10

28. The method of Claim 25, wherein the printed circuit board is mounted generally flat onto the wing plate.

29. The method of Claim 25, wherein the at least one printed circuit board is  
15 angled downward  $4.6^\circ$  by the at least one vertical plate from a back surface of a signal housing.

30. The method of Claim 25, wherein the wing plate positions the printed circuit board inward by an angle of  $3.5^\circ$  from a center line of the at least one vertical  
20 plate.

31. The method of Claim 25, wherein the at least one vertical plate is affixed to the at least one wing plate and a back surface of the signal housing by welding, stapling, fasteners, or glue.

5 32. A mounting plate assembly for a light head of a traffic signal housing, comprising:

at least one printed circuit board, at least one wing plate, and at least one vertical plate coupled to a signal housing.

10 33. The apparatus of claim 32, wherein the at least one printed circuit board is affixed to the wing plate by welding, stapling, glue, or fasteners.

34. The apparatus of claim 32, wherein the printed circuit board is angled generally downward by the at least one vertical plate from a back surface of the  
15 signal housing.

35. The apparatus of claim 32, wherein the at least one wing plate orients the at least one printed circuit board inward from a center line of the at least one vertical plate.

20

36. The apparatus of claim 32, wherein the at least one vertical plate is affixed to the at least one wing plate and a back surface of the signal housing by welding, stapling, glue, or fasteners.